

## TECHNICAL DATA SHEET

**Product Name:** Dipeptide diaminobutyryl benzylamide diacetate

**INCI Name:** Aqua, Glycerin, Dipeptide diaminobutyryl benzylamide diacetate

**CAS:** 7732-18-5, 56-81-5, 823202-99-9

**Synonyms:** H- $\beta$ -Ala-Pro-Dab-NH-benzyl acetate; H- $\beta$ -Ala-Pro-DabNHBz acetate; Syn-Ake acetate; Snake tripeptide acetate; (2S)-beta-Alanyl-L-prolyl-2,4-diamino-N-(phenylmethyl)butanamide acetate; BCP18324; Butanamide,  $\beta$ -alanyl-L-prolyl-2,4-diamino-N-(phenylmethyl)-, (2S)-, acetate (1:2); Butanamide,  $\beta$ -alanyl-L-prolyl-2,4-diamino-N-(phenylmethyl)-, (2S)-, diacetate; Dipeptide diaminobutyryl benzylamide diacetate; SYN-AKE

**Sequence:**  $\beta$ -Ala-Pro-Dab-NHBn.2CH<sub>3</sub>CO<sub>2</sub>H

**Chemical Classification:** Mixture

**Functional Category:** Skin and hair conditioning agent

**IUPAC Name:** acetic acid;(2S)-N-[(2S)-4-amino-1-(benzylamino)-1-oxobutan-2-yl]-1-(3-aminopropanoyl)pyrrolidine-2-carboxamide Dipeptide Diaminobutyryl Benzylamide Diacetate is a synthetic neuropeptide. It serves as an alternative to Botox.

**Chemical-Physical Properties:** Dipeptide diaminobutyryl benzylamide diacetate is a synthetic dipeptide composed of two amino acid residues connected by a peptide bond. The diaminobutyryl portion contains a butyryl component derived from butyric acid with two amino groups (-NH<sub>2</sub>). These amino groups play a key role in interactions with biological molecules such as proteins and receptors. The amino groups are polar, allowing the formation of hydrogen bonds, which contribute to the stability of the molecule in aqueous environments. The benzylamide group contains a benzyl ring (phenylmethyl group) attached to an amide group (-CONH<sub>2</sub>). The benzyl ring is hydrophobic and participates in hydrophobic interactions with the target receptor, which can contribute to binding specificity and strength. The amide group allows the formation of additional hydrogen bonds, increasing binding stability. Diacetate indicates the presence of two acetate groups (-COCH<sub>3</sub>) in the molecule. The acetate groups are polar and increase the molecule's solubility in water, which is important for cosmetic formulation. Additionally, acetate groups can contribute to molecule stability by preventing degradation and

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increasing resistance to hydrolysis. Dipeptide diaminobutyroyl benzylamide diacetate is soluble in water and alcohols, making it suitable for use in cosmetic formulations. It is stable over a wide pH range, allowing its use in various formulations without loss of efficacy. In its pure form, it can be in the form of a white or slightly yellowish powder or crystals. In its pure form, it usually has no specific odor, which is beneficial for cosmetic products where scent must be regulated with other ingredients. It shows stability at moderate temperatures but can degrade at very high temperatures, so it should be handled carefully during the production process.

**Effects on Skin:** Dipeptide diaminobutyroyl benzylamide diacetate acts as an antagonist of the muscle nicotinic acetylcholine receptor (nAChR) on the postsynaptic membrane. These receptors are responsible for receiving signals from the nervous system that cause muscle contraction. When the dipeptide binds to nAChR, it acts as an antagonist, meaning it blocks receptor activation by acetylcholine, a neurotransmitter that normally causes ion channels in the receptors to open and allows sodium ions to enter, leading to membrane depolarization and muscle contraction. By blocking acetylcholine receptors, dipeptide diaminobutyroyl benzylamide diacetate prevents the depolarization of the postsynaptic membrane. This results in the inhibition of nerve impulses that cause muscle contraction. Reducing muscle activity helps relax muscles and smooth the skin, leading to a reduction in the appearance of wrinkles. The mechanism of action of this dipeptide is similar to that of Waglerin 1, a peptide from the venom of the snake *Tropidolaemus wagleri*. Waglerin 1 also blocks muscle nicotinic acetylcholine receptors, leading to muscle paralysis. However, the dipeptide is designed to be safe for cosmetic use and acts locally on facial muscles to reduce wrinkles without systemic effects. Due to its specific mechanism of action, dipeptide diaminobutyroyl benzylamide diacetate is used in cosmetic products as a safe and effective component for reducing wrinkles and anti-aging treatments.

### Benefits:

- **Wrinkle Reduction:** The dipeptide reduces facial muscle contractions. By decreasing the frequency of muscle contractions, skin stress and tension are reduced. This allows the skin to recover and reduces microtrauma caused by constant facial movements. It provides effects similar to those of botulinum toxin (Botox). In-vivo tests have shown an impressive reduction in the appearance of wrinkles by over 50% after 28 days of use.

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• **Effects on Collagen and Elastin Synthesis:** Although the dipeptide primarily acts as an inhibitor of muscle contractions, it can significantly affect the synthesis of collagen, elastin, proteoglycans, and glycosaminoglycans indirectly. Less skin stress allows fibroblasts (cells that produce collagen and elastin) to function optimally. Consequently, this can lead to improved synthesis of these important proteins. Additionally, by reducing skin stress and tension, this dipeptide can also affect the synthesis of proteoglycans and GAGs, which play a key role in maintaining skin hydration and the structure of the extracellular matrix, thus contributing to better skin hydration and structure. Regular use of products containing this peptide can improve skin smoothness and texture, making it softer and more pleasant to the touch.

• **Prevention:** Inhibition of muscle contractions not only reduces existing wrinkles but can also prevent the formation of new wrinkles, contributing to long-term anti-aging effects. Users often notice rapid results. Significant wrinkle reduction is achieved within a few weeks of regular use.

• **Minimal Side Effects:** Dipeptide diaminobutyroyl benzylamide diacetate has minimal side effects compared to invasive treatments like Botox injections. It acts locally, reducing the risk of systemic side effects.

• **Compatibility with Other Ingredients:** This peptide can be easily incorporated into various cosmetic formulations, including creams, serums, and masks. It can be combined with other anti-aging ingredients such as hyaluronic acid, retinoids, and vitamins, enhancing the overall effect.

• **Ease of Use:** It can be used as part of a regular skincare routine.

• **Aesthetic Effects:** Reducing wrinkles and improving skin appearance can significantly contribute to better user confidence, making them more satisfied with their appearance.

**Use in Cosmetic Products:** Stimulates the synthesis of collagen, elastin, proteoglycans, and glycosaminoglycans. Clinical studies have shown a reduction in the appearance of wrinkles and expression lines due to decreased frequency of contractions.

Recommended use in concentrations of 1-5%. Added at the end of the manufacturing process or in the finished cream and lotion. The product is not preserved. For external use only. The product should be stored in a refrigerator at 2 to 8°C, protected from light.

**Application:** Anti-aging and wrinkle creams and serums. Can be combined with other agents in anti-aging products.

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**Source Raw Materials:** Amino acids

**Production Method:** SNAKE peptide is synthetically produced from amino acids.

**Animal Testing:** The substance is not tested on animals

**GMO:** Not GMO

**Vegan:** Does not contain animal-derived components



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